

--13. A speech recognition method, comprising:
defining a numeric language, the numeric language including a subset of a vocabulary,
the subset of the vocabulary including words that identify digits in number strings and words that
enable the interpretation and understanding of number strings;
defining first acoustical models for the numeric language at a first quality level;
defining second acoustical models for other words in the vocabulary at a second quality
level; and
storing the first and second acoustical models in an acoustic model database that is
accessible by a speech recognition processor.

14. The method of claim 13, wherein the numeric language includes digits, natural
numbers, alphabets, re-starts, and city/country name classes.

15. The method of claim 13, wherein the acoustical models are hidden Markov
models.

16. The method of claim 13, further comprising defining a set of filler models that
characterizes out-of-vocabulary features.

17. A speech recognition method, comprising:
receiving a speech signal;
performing a speech recognition process on the received speech signal to produce speech
recognition results, the speech recognition process being based on a set of acoustical models that
has been defined for a numeric language, wherein the numeric language includes a subset of a
vocabulary, the subset of the vocabulary including words that identify digits in number strings
and words that enable the interpretation and understanding of number strings; and
generating a sequence of digits using said speech recognition results, said generating
being based on a set of rules.

18. The method of claim 17, wherein said performing is implemented by a speech recognition processor.

19. The method of claim 17, wherein said performing is further based on a second set of acoustical models that has been defined for other words in the vocabulary.

20. The method of claim 19, wherein said second set of acoustical models is defined at a quality level different than the set of acoustical models for the numeric language.

21. The method of claim 17, wherein the numeric language includes digits, natural numbers, alphabets, re-starts, and city/country name classes.

22. The method of claim 17, wherein the acoustical models are hidden Markov models.

23. The method of claim 17, wherein said generating is implemented by a numeric recognition processor.

24. The method of claim 17, wherein the set of rules includes one of a naturals rule and alphabets rule.

25. The method of claim 17, wherein the set of rules includes a restarts rule.

26. The method of claim 17, wherein the set of rules includes a city/country rule.

27. The method of claim 17, wherein the set of rules includes a numeric phrases rule that realigns digits.

28. A system, comprising:
a speech recognition processor that receives unconstrained input speech and outputs a string of words, the speech recognition processor being based on a numeric language that represents a subset of a vocabulary, the subset including a set of words identified as being relevant for interpreting and understanding number strings; and
a numeric understanding processor containing classes of rules for converting the string of words into a sequence of digits.
29. The system of claim 28, further comprising:
an acoustic model database utilized by the speech recognition processor.
30. The system of claim 29, wherein the acoustic model comprises:
a first set of hidden Markov models that characterize acoustic features of words in the numeric language; and
a second set of hidden Markov models that characterize acoustic features of words in the remainder of the vocabulary.
31. The system of claim 30, further comprising:
a set of filler models that characterizes out-of-vocabulary features.
32. The system of claim 28, further comprising:
an utterance verification processor that identifies out-of-vocabulary utterances and utterances that are poorly recognized.
33. The system of claim 28, further comprising:
a validation database that stores a set of valid numbers; and
a string validation processor that outputs validity information based on a comparison of a sequence of digits output by the numeric understanding processor with valid numbers in the validation database.